

Appln No. 09/651,425

Amdt date April 8, 2005

Reply to Office action of January 24, 2005

**REMARKS/ARGUMENTS**

Claims 1-44 are pending in this application, Claims 1, 22, 43 and 44 are amended.

Claims 1-17, 19-38, and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng et al. (U.S. 6,009,256), in view of Schlansker et al. (U.S. 6,408,428), and in further view of Trimberger (U.S. 5,752,035). Claims 18, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng, in view of Schlansker, and in further view of Trimberger as applied to claims 1 and 22, and further in view of Mirsky et al. (U.S. 6,457,116). Applicants submit that all of the pending claims are patentable over the cited references, and reconsideration and allowance of the pending claims are respectfully requested.

Amended independent claims 1, 22, 43 and 44 include, among other limitations, identifying a plurality of functions in a program source code "that are anticipated to consume a substantial execution time," and "a matrix describing different combinations of said plurality of hardware accelerators, code variants and said hardware dependent executable code to support run time execution of the plurality of kernel sections by the processing element array, wherein each code variant performs a function whose inputs and outputs are identical" Applicants respectfully submit that the cited references alone or in combination do not disclose or suggest the recited limitation.

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First, none of the cited references, alone or in combination, teach or suggest "a matrix describing different combinations of said plurality of hardware accelerators, code variants and said hardware dependent executable code to support run time execution of the plurality of kernel sections by the processing element array, wherein each code variant performs a function whose inputs and outputs are identical."

Second, none of the cited references, alone or in combination, teach or suggest " identifying a plurality of functions in a program source code "that are anticipated to consume a substantial execution time." Applicants respectfully disagree with the assertion in the Office action that detecting "the most frequently executed code and replac[ing] it with programmable instructions unit, or accelerator set (e.g. col. 6, lines 31-56)," disclosed in Trimberger, teaches the above-mentioned limitation. A "most frequently executed code" is not the same as code "that are anticipated to consume a substantial execution time." For example, a small piece of code that takes very little time to execute may be a "most frequently executed code" that does NOT consume a substantial execution time.

Third, the alleged combination of the three references, Tseng, Kolchinsky, and Trimberger requires a series of separate, awkward combinative steps that are too involved to be considered obvious. Additionally, as the Examiner mentions, the first reference, Tseng "does not explicitly disclose the mapping in (i) is a matrix mapping of kernel sections into a plurality of hardware dependent executable code." (Office action, page 3,

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last paragraph.) However, the examiner states that "RTL level signal used in program to effect signaling of a FPGA and support emulation/simulation/debug of hardware circuit is equivalent to mapped sections code for executing hardware accelerators in FPGA) and partitioning via analysis from a software kernel so as to map during compilation of the kernel into execution by a hardware accelerator among the element array . . . ." (Id.) Therefore, this alleged equivalency adds yet another step to the three separate, awkward combinative steps. The fact that three different references are combined with an equivalent step (total of four steps), indicates that claims 1, 22, 43 and 44 are NOT obvious in view of cited references.

Furthermore, claims 18, 39, and 40 are rejected based on combination of FOUR different references. Again, the fact that four references are combined with an equivalent step (total of five steps), indicates that claims 18, 39, and 40 are NOT obvious in view of cited references.

Applicants therefore respectfully submit that independent claims 1, 22, 43 and 44 are novel and unobvious over the cited references and are therefore allowable. Applicants further submit that claims 2-21 and 23-42 that depend directly or indirectly from claims 1 and 22, respectively are allowable as are claims 1 and 22, and for additional limitations recited therein.

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition


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for allowance, and accordingly, reconsideration and allowance  
are respectfully requested.

Respectfully submitted,  
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